



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/619,915

07/15/2003

G. Samuel Hurst

ELG054 US1

7159

(2024773-70328)

7590

09/19/2006

EXAMINER

DANG, HUNG Q

Tyco Electronics Corporation

Attn: Michael Aronoff

MS R20/2B

307 Constitution Drive

Menlo Park, CA 94025-1164

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

87

Office Action Summary	Application No. 10/619,915	Applicant(s) HURST ET AL.	
	Examiner Hung Q. Dang	Art Unit 2612	

**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 39-63 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39-53 is/are allowed.
- 6) ☒ Claim(s) 1-2, 6-9, 13, 14 and 54-63 is/are rejected.
- 7) ☒ Claim(s) 3-5 and 10-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) ✓ | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) ✓
Paper No(s)/Mail Date <u>3/16/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in response to application's amendment dated 3/16/2006. The canceled claims 15-38 and the added claims 39-63 have been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 6, 7, 13, 14, 54, 57 and 59-62 are rejected under 35 U.S.C. 102(b) as being anticipated by Asano U.S. Patent 3,591,718.

Regarding claims 1 and 6, Asano teaches a touch sensor, comprising:

- a substrate having a resistive touch region (Figures 1 and 10, unit 12);
- a set of electrodes (Figure 1, units 21-24) electrically coupled to the touch region; and
- a plurality of band segments (Figure 10, units 15-18) framing the touch region and having an intermediate resistivity between the resistivity of the electrodes and the resistivity of the touch region (column 1 lines 17-22 and column 5, lines 8-18; the resistivity of electrodes are inherently low, therefore, the resistivity of said band segments are higher than the resistivity of said electrodes), wherein the electrodes are disposed between the band segments (see figures 1 and 10), and at least one of the band segments has a linear

resistance that varies along its length (column 2, lines 20-22 indicates that the band segments have the resistivity of 10 ohms per square, which makes said band segments having linear resistance; also, the band segments 15-18 have a linear length D, and said linear resistance indeed varies along length D of segments 15-18), each band segment being continuous along at least a portion of its length (band segments 15-18 are continuous).

Regarding claims 7, 13 and 14, claims 7, 13 and 14 are partially rejected for the same reasons as the rejection of claim 1. Asano also teaches control electronics (Figure 1, units 31 and 33) coupled to the electrodes (Figure 1, units 21-24) for receiving the touch information and measurable information from the touch sensor, wherein the control electronics uses an algorithm to determine the coordinates of the location of the touch in touch region based on the touch information, and modifies the algorithm based on the measurable information (column 2, lines 10-70).

Claim 54, 60 and 61 are rejected for the same reasons as claim 1. Asano also teaches a resistive touch region with a non-rectangular geometry (Figure 10, touch region 12 is non-rectangular).

Regarding claim 57, the non-rectangular touch region disclosed by Asano also has a curved periphery.

Regarding claim 59, Asano also teaches band that has a substantially uniform linear resistance (figure 1 shows bands 15-18 having linearly uniform structure and column 2, lines 20-22 indicates that said bands having resistance of 10 ohms/square).

Regarding claim 62, the band segments (Figure 1, units 15-18) disclosed by Asano are also positioned between the electrodes (Figure 1, units 21-24).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 9 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano U.S. 3,591,718.

Regarding claims 2 and 9, even though, Asano does not specifically teach a resistance ratio defined by the combined resistance of the band segment over the resistance of the touch region is greater than 0.05, however, such ratio can be easily derived by one skilled practitioner through routine experimentations to come up with an optimal design for such sensor.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide such a resistance ratio to the touch sensor disclosed by Asano, as explained above, to derive an optimal design for said sensor.

Regarding claim 63, page 9 paragraph [00017] of the specification of this application indicates that “the electrodes can either be mounted directly to the substrate or can be mounted to another structure, such as, a cover sheet, that comes into electrical contact with the touch region”. Clearly, there is no criticality and functionality in having said cover sheet. Therefore, by choice of design, it would have been obvious to one skilled in the art to provide such cover sheet to the touch sensor disclosed by Asano.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asano U.S. 3,591,718 in view of applicant’s prior arts admission.

Regarding claim 8, even though Asano does not specifically mention a mapping algorithm, however, the applicant’s prior art admission discloses that mapping algorithm is conventionally used in resistive touch sensor for mapping the touch location to the Cartesian space (page 2 of specification, paragraph [0005]).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a mapping algorithm to the touch sensor disclosed by Asano, as evidenced by applicant’s prior art admission, in order to map the touch location to the Cartesian coordinates.

7. Claims 55, 56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano U.S. Patent 3,591,718 in view of Kent US Pub. No. 2003/0164820.

Regarding claims 55, 56 and 58, Asano teaches the touch sensor of claim 54, except wherein the non-rectangular geometry is a triangular geometry, a hexagonal geometry or a non-planar geometry.

Kent, in the same field of endeavor, teaches a touch sensor, wherein the touch region has a triangular geometry, a hexagonal geometry or a non-planar geometry (figures 15b, 15c and 22c, respectively).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a triangular/hexagonal/non-planar touch region to the touch sensor disclosed by Asano in view of applicant's prior art admission, as evidenced by Kent, to achieve the desired shape for the touch region of the touch sensor.

Allowable Subject Matter

8. Claims 3-5 and 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 5 and 12, the prior arts of record fail to teach a touch sensor as claimed in claims 5 and 12, wherein the at least one band segment comprises an

Art Unit: 2612

array of electrically conductive elements, the conductive elements having a spacing or size that varies along the length of the at least one band segment.

Regarding claims 3 and 10, the prior arts of record fail to teach or disclose a touch sensor as claimed in claims 1 and 7, respectively, wherein the at least one band segment has a width that varies along its length.

Regarding claims 4 and 11, the prior arts of record fail to teach or disclose a touch sensor as claimed in claims 1 and 7, respectively, wherein the at least one band segment has a thickness that varies along its length.

9. Claims 39-53 are allowed.

Regarding claim 39, the prior arts of record fail to teach or disclose a touch sensor as claimed in claim 39, wherein at least one band segment comprises a continuous resistive background and an array of electrically conductive elements disposed substantially perpendicularly along at least a lengthwise band portion of the at least one band segment in contact with the background material, the electrically conductive elements having a resistivity that is lower than the resistivity of the background material (in order to allow the linear resistance of the band to be more easily controlled and manufactured, page 11 of specification, lines 13-15).


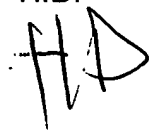
Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Q. Dang whose telephone number is (571) 272-3069. The examiner can normally be reached on 9:30AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hung Q Dang
8/28/2006
H.D.



WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600